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10/020,310

12/12/2001

Thomas Schwengler

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08/23/2005

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EXAMINER

PAYNE, DAVID C

ART UNIT

PAPER NUMBER

2638

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,310

Applicant(s)

SCHWENGLER, THOMAS

Examiner

David C. Payne

Art Unit

2638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-15 and 25 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 16-24, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims **1-3, 7, 8, 16-18, 20-22, 24, 26 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Raj et al.** US 20020154354 A1 (Raj) in view of **Mori et al.** US 6711314 B1 (Mori).

Re claim 1, 16 and 20, Raj disclosed

A system/method of communicating information between processors in a multiple processor system.

Each processor includes a transmitter and a receiver, **see e.g. page 1, ¶ 0015**. Each processor communicates optically with one other processor in the system at a time, **see e.g. page 1, ¶ 0016**.

The processors communicate with other processors over a known time slot, **see e.g. page 2, ¶ 0023**.

The system includes a time-dividing device (**MEMS switch, shown in Figure 4, 112**) which is used to bend the signal at different angles (**page 4, ¶ 0046**) toward given receivers, **see e.g. page 3, ¶ 0035**. Furthermore, Raj uses codes and wavelengths to only send information that is destined for a receiver to that receiver, **page 2, ¶ 0026**.

Raj is not expressly clear as to the nature of the optical signal and the plurality of section corresponding to time slots and how they relate to receivers.

Mori disclosed a MEMS switch that operates according to a time-division manner making pair-wise

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connections, see e.g., Mori **col. 16, lines: 33-55**, as well as a timing diagram of the control switching method, **see Figure 22**. It would have been obvious to one of ordinary skill in the art at the time of invention to use the MEMS switch in Raj in time-division manner as does Mori, since the outputs are all arranged along a row/column order, each receiver can thus be assigned a specific time slot which coincides with a specific row column appearance, and furthermore each receiver will be found connected to only one output.

Re claim 2, 17 and 21, the modified invention of Raj and Mori disclosed further comprising an end device (processor, **see Raj page 2, ¶ 0026**), wherein the bent optical signal is transmitted to the end device from the receiver.

Re claim 3, the modified invention of Raj and Mori disclosed wherein the optical transmitter comprises a laser (**see Raj page 1, ¶ 0015**).

Re claims 7, 8, 18 and 22, the modified invention of Raj and Mori disclosed wherein the time-dividing device comprises a rotating mirror/ optical switching device, **see Raj 112 of Figure 4**.

Re claims 24, 26 and 27, the modified invention of Raj and Mori is silent regarding whether the section of the bent optical signal received includes substantially the entire full optical signal transmitted from the optical transmitter. However, it would have been obvious to one of ordinary skill in the art at the time of invention that a mirror typically reflects virtually all of an optical signal unless it is specified as a partially reflecting mirror based on convention in the art.

4. Claims **4 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Raj et al.** US 20020154354 A1 (Raj) and **Mori et al.** US 6711314 B1 (Mori) as applied to claim 1 above, and in further view of **Hui et al.** US 6438148 B1 (Hui).

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Re claims 4, 5, the modified invention of Raj and Mori fails to disclose wherein the optical transmitter comprises a microwave / radio frequency source.

Hui disclosed an microwave radio frequency source for an optical transmitter, **see Hui col. 4 lines 65-67; col. 5 lines 1-10**. It would have been obvious to one of ordinary skill in the art at the time of invention to use a microwave source in the modified invention. One is motivated as such since microwave sub-harmonic modulation provides frequency stabilization and phase locking of the beat signals for lasers effectively reducing frequency jitter and phase noise of the beat signals, **as discussed in Hui, see col. 5 lines 5-10**.

5. Claims **19 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Raj et al.** US 20020154354 A1 (Raj) and **Mori et al.** US 6711314 B1 (Mori) as applied to claims 16 and 20 above, and in further view of **Pepper** US 6760512 B2 (Pepper).

Re claims 19 and 23, the modified invention of Raj and Mori fails to disclose wherein the bending the optical signal comprises refracting the optical signal. Pepper disclosed using a wave guiding layer (**see Pepper, 610 of Figure 6**) which provides control over refraction of a signal (**see Pepper, col. 9 lines 64-67, col. 10 lines 1-5**) along with a MEMS array to steer beams of light. It would have been obvious to one of ordinary skill in the art at the time of invention to use the refractive layer along with the MEMS switch in the modified invention to provide a uniform delay response across all the MEMS switches, as discussed in **Pepper, see col. 9 lines 35-67**.

Allowable Subject Matter

6. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claims 9-15 and 25 are allowed.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Dcp

A handwritten signature in black ink, appearing to read "D.C. Payne", with a stylized flourish at the end.

David C. Payne
Patent Examiner
AU 2638